Essay Review: Greening Berlin: the co-production of science, politics, and urban nature

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by Ingmar Lippert and Josefine Raasch

In his book *Greening Berlin*, Jens Lachmund (2013) contributes to the growing genre of the social studies of environmental science and governance. Focusing on Berlin's biotope-protection policy, Lachmund's work provides an analysis of the co-emerging of ecology and urban environmental planning. By that, he adds to the recent historiography of nature conservation and landscape planning. The book is published by MIT Press in the 'Inside Technology' Series, which aims to combine historiographic books on technology with methodologies developed in sociological or scientific knowledge communities. Lachmund's book fits well into this series as it 'combines insights and methods from social studies of science and technology, from environmental sociology, from environmental history, and from urban studies to shed light on the nexus of science, politics, and the spaces of the natural environment' (p. 5). This framing provides the background we have in mind when we review this book from the perspective of the social studies of science and technology (STS). Before turning to a discussion of Lachmund's detailed argument, we begin our review with a brief reflection on the discourse of current (urban) environmental science and governance.

Introduction

Cities and urban assemblages are key sites of governance of environmental destruction as well as of hope. The United Nations' *Compact of Mayors*' initiative for responding to climate change (launched 2014) and the European Commission's *Covenant of Majors for Climate & Energy* (since 2008) are an outcome of recent policy investment in cities as significant drivers in sustainable development. Considering urban settlements in relation to humans as troubling as well as being troubled by the environment is by no means a recent fad. This is illustrated by the subprogram 'Metropolitan Areas as Ecosystems' in UNESCO's *Man and the Biosphere Program* (ongoing since 1971) but also historically, say, by Friedrich Engels's *The Condition of the Working Class in England* ([1845] 1969). In the attempts to manage and govern urban ecological and built environments and their energy infrastructures, climate change and biodiversity are deeply related to programmes of inventorisation and 'datafication' of the urban environment. See for example the screenshot of the *Compact of Mayors* subpage for Berlin: at the bottom of the page, we find the linear phases of the trajectory towards a sustainable city; by following a vague 'commitment' to the *Compact*, the city has to produce an 'inventory'.

If we think of the mayors' initiatives, and the 'atmosphere business' – emissions trading – then, it

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Screenshot: Compacts of Mayors, Berlin (fair use). Click for full size

seems obvious to also think of the marketisation of biodiversity (using terms such as ‘ecosystem services’ and ‘natural capital’). Yet, anyone attempting to turn urban biodiversity into ecosystem services would to well to question the emergence of urban biodiversity with Lachmund’s book.

In Viitanen and Kingston’s (2014) analysis, *datafying* urban environmental and climate relations through smart technologies leads to outsourcing democratic and environmental resilience to the global technology sector – consider Cisco, Microsoft, Phillips or IBM. Such critical engagement is accompanied by recent theorisations within actor-network theory, which radically question the ontology of a city, its humans and non-humans, materials and semiotic relations (Blok 2013; Farías and Bender 2010): the role of the human as the ultimate arbiter of the city is deconstructed. Specifics of historically, bio-chemically and otherwise materially situated people, things, plants, animals, what they do to and/or with each other, are foregrounded as emerging and shaped by urban and environmental matters. This perspective resonates with understanding the human not as an abstract entity living on and exploiting Earth, but rather as unequally participating in myriad complicated ways in emerging local-planetary and unruly processes, occasionally addressed as Gaia (Stengers 2015; Haraway 2016; Latour 2017).

What urban nature and ecology is, is not self-evident in this discourse. That it is neither something we can simply leave to administration nor the market alone, clearly emerges in Jens Lachmund’s *Greening Berlin* (2013). For Lachmund presents us with the shifts in how urban nature was conceptualised across different scientific-administrative-political configurations, ranging from late 19th century Kaiserreich and the Weimar years to post-World War II, and (here focusing on West Berlin) well into post-1990 reunified Berlin. He details how in the different configurations, different kinds of natures have been imagined and brought into being (e.g. *Naturmonumente*, biodiversity).

Lachmund’s approaches his topic historically, retracing carefully how the term urban ecology has been enrolled and mobilised to bring into being, or refer to, three different kinds of discursive entities. Using the city of Berlin as the focus of his study, he locates and reconstructs the specific building and shaping of the subdiscipline of ecology at the Department of Ecology at Berlin’s Technical University (*Technische Universität Berlin*), associated with professor Herbert Sukopp. Lachmund also details how Sukopp’s urban ecology moved into urban planning discourse: The scientific urban ecology changed when it was translated into administrative practices, generating not only different kinds of claims about the environment but also new ‘environmental entities’ (p. 68). Administration’s urban ecology, finally, was discursively distinct from the heterogeneous mobilisation of political interest groups in the city – amongst others *Bürgerinitiative Westtangente, Förderverein Südgelände*, *Stiftung Naturschutz Berlin*, *Grüne Liga,* through publications like *Der Rabe Ralf* or the

Berliner Naturschutzblätter – which 'contested natures' (Macnaghten and Urry 1998). Lachmund allows his readers to identify these different discursive spaces. Following the Jasanoffian dictum of co-production (Jasanoff 2003), he carefully lays out how the natural sciences of ecology and landscape planning have shaped and have been shaped by both local and national policies and by the material structure and dynamics of natural entities in Berlin (such as the small triangular site of *Dörnbergdreieck*, next to the *Tiergarten*). For this analysis, *Greening Berlin* draws primarily on documents as sources, which Lachmund traces and interprets in the context of qualitative interviews with planners, ecologists and activists.

Greening Berlin as a generative resource

The book manages well to acknowledge complexities and keep them open. With specific details, it highlights the entanglement of discourses and practices, entities and actors that shaped and contributed to different urban natures, science and politics. It also presents the possibilities and constraints of these entangled participants of 'doing urban ecology' as temporally and spatially situated. The book describes the tensions, dynamics and developments and argues for fluid, ever changing ecologies. This has transformed the way we look at the little green spaces in our neighbourhood now. Take for example this situation:

On a sunny summer day in Berlin, July 2017, Ingmar und Josefine take a break from writing this review. Both look down from the window of the fifth floor at Berliner Straße, Berlin-Pankow, where Josefine lives. They see a fenced green area below them, next to the front wall of the house. On this area is an old, but recently cut down, lilac that shows already new sprouts, and some young, light-flooded hedges, planted together with other bushes only three months ago. Back then, Josefine had asked the gardener about the names of the plants. He did not respond to her question, but told Josefine that he does not have any grass seeds for the area. Now, all sorts of 'weeds' grow there between the bushes and hedges, some as tall as Ingmar and Josefine. Josefine tells Ingmar that some sparrows live there now. They moved into the bushes two weeks ago.

Stretch of urban environment at Berliner Straße, Berlin-Pankow, copyright authors.

With Lachmund, we 'see' the green area as historically emerging, constituted by practices and discourses, timely and spatially situated. We discuss that, according to Lachmund, sharing

information about the environment was illegal in the former German Democratic Republic, the East (2013: p. 157, n.82).

Now we wonder if this spot might have been a contaminated site when the house was built in 1959 from the rubble, leftovers of World War II. Looking at the other, properly cared for, green areas behind the house, in front of the other houses and at the green passage where the tracks for the train are, we start to think about the networks of biotopes described in the book. We begin to wonder how they network. Also, who cares for the green patches: the one in front of the houses, the one where the train tracks are and another one, behind the house? How are the green areas cared for and how is it known by whom? What regulations and institutions shape the patches and their connectedness?
The emphasis of the relationality and situatedness are the main assets of the book. This emphasis distinguishes the book from many others on urban ecology and environmental sustainability. Other books on climate and the environment often put less emphasis on historically contingent, spatialising performances (p. 10). Lachmund's book, however, pays attention to the often-overlooked green areas, such as a corner of a neighbourhood, to how these are known and by whom and it urges the reader to acknowledge such areas as historically contingent.

How do we tell stories about how biotopes come to matter?

To nuance this book's capacity and achievement, we want to address how Lachmund presents the relationship between ecosystem data and information to environmental policies and politics. This also raises questions about the authoritative voice by which Lachmund tells history.

How do we attribute value to biotopes? This topic is timely for the social studies of science and technology engaging with the governance and administration of the environment. How biotopes are valued is a question that links increasingly hegemonic environmental policy discourses of ecosystem services and natural capital with the field of valuation studies. The discourse of ecosystem services and natural capital sets out from considerations of sustainability crises as market failures (e.g. Stern 2008). Let us assume the market rules: in order to prevent market-based societies from disregarding an environment, this very environment needs to be translated into economic terms, such as into services and capital stocks. Supposedly, then, the market will take into account the expected profits and losses generated by decline or improvement of specific environmental realities.

In order to engage with this argument of markets as failing, we could draw on foundational Marxist critique. It challenges the very idea that extending the market across all social and natural realms will lead to social and environmental well-being as it results in tensions between environmental justice and the need for companies in capitalist competition to prioritise profit (see, e.g., Pepper 1998).

We could also draw on the social studies of markets, economics and valuation. Here, we encounter very nuanced accounts and critiques of how specific environments are turned into data, information, numbers, how the specifics of datafication matter politically, and how the configuration of data

shapes situated environmental management and governance – in short, we learn about what is at stake (Blok et al 2016; Lippert et al 2015).

Paul Edwards's work (2010), for instance, makes analytically clear that climate data is never raw, but that infrastructural and socially configured measurements, devices and models produce the data that climate sciences work with. Such social studies of environments as data and as measurement in practice thrive through specifics. For such studies, it matters, for example, that global circulation models are data-laden, rather than purely mathematical: if climate science modelled the atmosphere by only applying the 'basic physical laws governing atmospheric behaviour', science would simply not arrive at timely conclusions. Allowing 'observationally-derived approximations or heuristics into the model core', and thus doing parametrisation, reduces costs and time investment (Edwards 1999: p. 448-9). This parametrisation has raised significant epistemological troubles in the core of climate science, despite its explanatory and predictive successes. For instance, the absorption of solar radiation, or more precisely how specific '[a]tmospheric molecules absorb solar energy at particular frequencies' is not calculated in modelling as singular spectrographic 'lines', but '[i]nstead, absorption is represented in [global circulation models] by coefficients which implicitly integrate all the absorption lines'. Thus, the numerical analysis of specific absorption gets silenced at the lines. Here, the validation of climate models is at stake.

Wondering how environmental information is done in a multinational company, one of us (Lippert 2016a, b), analyses the production of a global carbon footprint account. Lippert describes that in optimising the processes of carbon accounting, the company learned and decided to substitute a range of facility managers with hands-on experience in environmental impacts and material resource consumption by financial clerks. The company considered the latter as raising fewer issues concerning the gaps in corporate environmental accounting. By excluding the environmental actors who were in the position to care for specific environmental issues, the facility managers, the company managed to be more efficient in greenwashing.

What can someone with an interest in learning how environmental and socio-technical realities have shaped the value of biotopes learn from Lachmund's book? It questions the ecologists' standard (2013: p. 110-2): the claim to evaluate urban spaces in terms of science, validity, objectivity for processes of urban planning and policy. Lachmund contrasts this standard by pointing to multiple ways of changing the epistemology of biotope evaluation in order to allow the evaluation to 'provide a rational fix of potential conflicts between conservational aspirations on the one hand, and competing land-use claims on the other' (p. 110).

Lachmund describes this changing by highlighting key qualitative and quantitative variables of the *Species Protection Program*. In its value assessments, occurrencies of species were assessed in relation to different kinds of epistemic entities such as species, plant communities, habitats and ecosystems. Lachmund highlights a tension in Sukopp's approach: On the one hand, did Sukopp claim the count of species required data 'that were often not available' (p. 111), on the other hand

was biological diversity (which requires the count of species) correlated with biotope size. Lachmund points out that for the survey team, ‘an excessive number of species could also be a sign of ecological disturbance’ (p. 111). However, rather than using the absolute number of species, the survey team in Berlin evaluated specific biotopes: they ‘referred to an average range of species diversity in the respective biotope type as a yardstick’ (p. 111). This knowledge-practice implies a switch from species to a land-use category. This discussion meets a widely shared consideration among the book’s audience: scientific knowledge claims can be otherwise. In his conclusion on the value of biotopes, Lachmund foregrounds that environmental knowledge claims in biotope valuation were used to translate species data related knowledge claims ‘into land-use claims that could be justified and defended in administrative-political conflicts’ (p. 112). He notices that in this process a biotope became something given in nature whilst the contingency and emergence of the quasi-objective status was concealed.

Lachmund’s presentation of empirical material and context as well as his line or argument are well compatible with his objective to demonstrate the co-production of science, politics and urban nature. It also becomes clear that something like the value of a biotope, or, for that matter, of an ecosystem is the product of a contingent process of (social) construction. His presentation, however, leaves unanswered how any of these contingent developments specifically mattered.

Making Sukopp’s critique of policy programmes visible, makes conflicts merely notable. Conflict seems rather marginal in Lachmund’s analysis of the production of environmental information. His analysis focuses on the version of greening that wins. Whilst we are impressed by his foregrounding of specific regimes as relationally emerging, we would have liked to read more about what gets silenced in the described dynamics. Being left alone with this question, we still wonder how this specific version of assigning a value to biotope shaped reality and how the scientific-administrative practice of evaluation mattered. Another criticism relates to the tension emerging from Lachmann ‘validifying’ his writings by writing himself out of the text and a need to reflect on his own knowledge production. Indeed, Lachmund introduces the different theoretical approaches to social practices very well. They have in common the focus on these discourses and practices that shape urban ecology and ecological understanding. He also carefully presents his data and the case as embedded in the political and ecological situations, and different academic fields. Yet, while Lachmund points to these discourses and practices through which urban ecology and ecological understanding were co-produced, he reflects on his own knowledge production less explicitly.

The effect of Lachmund writing himself out of the text is by no means trivial. In fact, it allows to shift between relational and situated analysis that stays true to an emerging through practices and a rather sociological representation that frames concepts as abstract entities, existing independently of the practices and discourses through which they came into being. Consequently, Lachmund blurs some of his own arguments. Take for example the concept ‘local’ when discussing the local production of ecology. Lachmund uses it sometimes for describing given spatially distinct entities

(e.g. p. 3, 5, 6) that simply exist. At other times ‘local’ is used for describing results of localising practices and discourses (e.g. p. 10, 53). While the former ‘local’ is an area that pre-exists and is independent of the practices and discourses, the latter ‘local’ emerges through ‘spatializing practices’ (p. 10) and is ‘historically contingent’ (p. 10). Only the latter use of ‘local’ aligns with the arguments made in the book, namely, that ‘they have to be analysed in terms of the discourses and practices that dwell within them and that give them meaning and structure’ (p. 8). Thus, we would have wished for Lachmund to apply the relational and situated analysis consistently.

In a similar move, Lachmund introduces ‘Herbert Sukopp and a group of researchers around him’ as notably influential in making Berlin one of the world’s leading centers of urban ecology (p. 2). Here Sukopp and his colleagues are presented as actors in a *network* that shape the greening of Berlin. In this logic, Lachmund’s book itself is part of this *network* as his book is informed by and might shape these discourses and practices as well. On page 127, however, Sukopp is described as an *example* of how the scientific community influenced policy makers and, hence, shaped the production of urban environments. Applying this logic to our analysis of the book, Lachmund wrote himself and his book out of the practices and discourses that shape the production of urban environments.

The shift between a conceptualization as a *network* and as an *example*, this needs to be emphasised, is subtle. Yet, through this shift, a very different logic emerges. The logic that frames Sukopp and his colleagues as co-actors, makes the book part of the process of co-production. By contrast, the logic in which Sukopp and his colleagues, are used as examples for how the science went beyond being pure science by confronting and thereby shaping policy-making, is merely representational. The book and its writer are detached from these discourses and practices, they only represent the discourses and practices. It leaves us with the impression that this history, represented by Lachmund as a ‘distant observer’ (Verran 2001), ‘really happened’, rather than describing how this book is shaped by previous discourses and practices as well as shaping them. As STS researchers, with a commitment to relational approaches, we would have preferred Lachmund to be more coherent in his application of logics or to make this subtle shifting from the relational analysis of science, politics and urban nature to a representational analysis explicit. For us, as his readers, this would have helped us in following the author in his processing of the data, how he selects, highlights and finally prioritises certain narratives of the past over others.

In conclusion, Lachmund presents a comprehensive and ‘systematic analysis of the development of urban nature conservation in one German city’ (2013: p. 15). He could have easily contributed more profoundly to the methodology of historiography, a genre in which positioning the author as a distant observer seems to be crucial for evoking validity. However, the book offers a novel approach to many different fields. It is carefully and thoughtfully written and generates an awareness for urban ecologies and how they come into being.

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